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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/728,829

Applicant(s)

LI ET AL.

Examiner

JOSHUA SMITH

Art Unit

2419

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 1-3 is/are allowed.
6) ☒ Claim(s) 4-18 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

The amendment filed 10/08/2008 has been entered.

- **Claims 1-18 are pending.**
- **Claims 1-3 are previously allowed.**
- **Claims 4-18 stand rejected.**

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 states "(6) calculating a **second estimated PER**, denoted as $P2(r_n)$ **over the second plurality** of transmitted packets" (emphasis added by examiner). However, the specification states in page 12, lines 12-13, "a number $N2(r_n)$ is calculated, which equals $N(r_n)-N1(r_n)$ ", and in page 13, lines 6-9, "suppose that the quantity of failure packets is $F2$, and then PER $P2(r_n)$ can be estimated by following functions:

$$F = F_1 + F_2$$

$$P2(r_n) = F/N(r_n)" \text{ (emphasis added).}$$

The specification clearly shows that calculating a second estimated PER $P2(r_n)$ involves the sum of the numbers of failure packets of both the first plurality of packets and the second plurality of packets ($F = F_1 + F_2$), and involves the sum of both the number of the first plurality of packets and the number of the second plurality of packets ($N(r_n) = N_1(r_n) + N_2(r_n)$, since $N_2(r_n) = N(r_n) - N_1(r_n)$). As a result, the specification clearly indicates that a second estimated PER $P2(r_n)$ is calculated over both the first plurality of transmitted packets and the second plurality of transmitted packets.

Claims 5-18 are rejected through dependence from Claim 4.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 states "calculating the second estimated PER $P2(r_n)$ according to the number of the second plurality of acknowledge packets and **the second number of the second plurality of packets**" (emphasis added by examiner). This is indefinite since there is no "second number" for a second plurality of packets mentioned in Claim 9 or in

Independent Claim 4 which Claim 9 depends from. Claim 4 states "a second number N2", where "the number of the second plurality of packets is equal to a second number N2 minus the first number N1", which would mean that the "second number N2" is the sum of "the number of the second plurality of packets" and "the first number N1", and that "second number N2" **involves both** the number of the second plurality of packets **and** the first plurality of packets ("N1"). Examiner will treat "the second number of the second plurality of packets" to indicate "the second number **that is the sum** of the second plurality of packets **and the first plurality of packets**".

Claim 10 is rejected through dependence from Claim 9.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig et al. (Patent No.: US 7,154,854 B1) in view of Tanigichi et al. (Patent No.: US 6,445,679 B1), Gable et al. (Patent Number: 4,550,402), Agarawal et al. (Patent No.: US 6,434,191 B1), and Corke et al. (Patent No.: US 6,414,938 B1), hereafter referred to as Zweig, Tanigichi, Gable, Agarawal, Corke, respectively.

As for Claim 4, Zweig teaches in column 10, lines 23-31, and FIG. 5, Sheet 4 of 4, of how the fragmentation threshold transmission parameter, which can be determined by an error factor upper threshold, will determine the number of packets that will be used to send 1500 bytes of data, and each packet will have a corresponding acknowledgement packet (substantively the same as "(1) transmitting a first plurality of packets, wherein a first number N1 of the first plurality of packets is determined according to the $Q_H(r_n)$ " in the instant invention).

Zweig also teaches in column 8, lines 27-28, and FIG. 4, Sheet 3 of 4, in step item 404, determining a factor indicative of the error(s) that occurred in a transmission (substantively the same as "(2) calculating a first estimated PER, denoted as $P_1(r_n)$, over the first plurality of transmitted packets" in the instant invention).

Zweig also teaches in column 8, lines 37-38, and FIG. 4, Sheet 3 of 4, comparing a transmission error factor to a predetermined upper threshold, where, in step item 406 shows "IS FACTOR ABOVE AN UPPER THRESHOLD?", and if "YES" is correct, the routine enters step item 408, and if "NO" is correct, the process enters step item 410 (substantively the same as "(3) checking whether the $P_1(r_n)$ being larger than the

Q_H(r_n), if yes, processing step (4), else processing step (5)” and “(9) checking whether the P_2(r_n) is larger than the Q_H(r_n), and if yes, processing step (10)” in the instant invention).

Zweig also teaches in column 8, lines 45-46, and FIG. 4, Sheet 3 of 4, the routine will reduce a transmission parameter at step item 408 (substantively the same as “reducing” in the instant invention).

Zweig also teaches in column 10, lines 23-31, and FIG. 5, Sheet 4 of 4, of how the fragmentation threshold transmission parameter, which can be determined by the error factor lower threshold as discussed above, will determine the number of packets that will be used to send 1500 bytes of data, and each packet will have a corresponding acknowledgement packet, and Zweig also teaches in column 8, line 21, and in FIG. 4, Sheet 3 of 4, that the method of Zweig is a loop, implicitly teaching that multiple groups of packets are transmitted and acknowledged in each revolution (substantively the same as “(5) transmitting a second plurality of packets ... and the second number N2 is determined according to the Q_L(r_n)” in the instant invention).

Zweig also teaches in column 8, lines 27-28 and 33-36, and FIG. 4, Sheet 3 of 4, routine item 400 is a looping routine, showing an error factor is calculated for every revolution of the routine will, and multiple revolutions of the routine will produce multiple error factors (substantively the same as “(6) calculating a second estimated PER, denoted as P_2(r_n), over the second plurality of transmitted packets” in the instant invention).

Zwieg also teaches in column 8, lines 53-54, and FIG. 4, Sheet 3 of 4, comparing a transmission factor error to a pre-determined lower threshold, where step item 410 consists of "IS FACTOR BELOW A LOWER THRESHOLD?", and if "YES" is correct, the routine enters step item 412, and if "NO" is correct, the routine enters step item 402 (substantively the same as "(7) checking whether the $P_2(r_n)$ being smaller than the $Q_L(r_n)$, if yes, processing step (8), else processing step (9)" in the instant invention).

Zweig also teaches in column 8, line 61, and FIG. 4, Sheet 3 of 4, the routine will increase a transmission parameter (substantively the same as "increasing" in the instant invention).

Zweig fails to teach changing a transmission rate and ending a method, a number of a second plurality of packets is equal to a second number minus the first number, and a first number $N1$ of a first plurality of packets is determined according to $Q_H(r_n)$ and a second number $N2$ is determined according to $Q_L(r_n)$.

Tanigichi teaches in column 2, line 1, "dynamic adjustment of a transmission rate" (substantively the same as "transmission rate" in the instant invention).

Tanigichi also teaches in column 29, lines 25-29, and FIG. 26, Sheet 22 of 27, a flow chart involving a setting change of a transmission rate, where the flow chart ends at decision step item 119 and if "YES" is correct, ending the flow chart at "STREAM TRANSMISSION END" (substantively the same as "ending the method" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Tanigichi with the invention of Zweig since Tanigichi provides a method for controlling the transmission rate based on quality of

service, and could include the error factor thresholds of Zweig, enhancing the usage of the thresholds by employing them in controlling the transmission rate.

Gable teaches in column 4, lines 37-41, a number of mini-packets in a second group correspond to a number necessary to complete a transmission of a message and corresponds to a word count number transmitted with a first group of mini-packets, implicitly teaching that a second number of mini-packets is the total number of mini-packets of a complete message minus the number of the first group of mini-packets (substantively the same as "wherein the number of the second plurality of packets is equal to a second number N2 minus the first number N1" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Gable with the invention of Zweig since Gable provides a method in which a message that is divided into smaller data units is separated into two transmission bursts of these smaller data unit, allowing the system of Zweig to track a message and calculate the transmission error factor for these bursts and to maintain more detailed error tracking based on errors of smaller data units, and it would have been obvious to one of ordinary skill in the art at the time of the invention to use smaller data units in which to divide messages since certain protocols demand data units to be below a certain length in order to ensure high and fair throughput for data units regardless of origins, and smaller data units ensure less data is lost and in need of retransmission if a data unit is has errors.

Agrawal teaches in column 6, lines 30-32, of a component that uses the BER to adaptively determine the number of packets to send in a packet sequence over a path,

and, in column 5, lines 11-13, and FIG. 3A, Sheet 4 of 11, sequence 210 and sequence 310 are composed of different numbers of packets, where sequence 310 is composed of one less packet than sequence 210 (determining a first number N_1 and a second number N_2 according to the $Q_H(r_n)$ and the $Q_L(r_n)$, respectively). It would have been obvious to one skilled in the art at the time of the invention to combine the invention of Agrawal with the invention of Zweig since Agrawal provides a method where the number of packets to send can be determined and controlled by the error factor thresholds of Zweig, which will enhance the usage of the thresholds by employing them in controlling the number of packets that are sent at a time.

Corke teaches in column 5, lines 1-19, a PDG directs a subscriber unit to shift down if a R-SCH fixed error rate exceeds a predetermined limit (a number for packets is determined according to $Q_H(r_n)$).

Corke teaches in column 4, lines 16-19, and in column 5, lines 1-19, to implement a rate shift up, if at a given rate R , a R-SCH transmit gain falls below a rate dependent threshold, $G_{up}(R)$, a PDG can eventually grant the up shift, and will result in setting a RATE equal to a next highest rate, and since a gain is necessary to achieve a required signal-to-noise ratio E_b/N_0 , and a signal-to-noise ratio is closely related to an error rate, a rate shift up is made for exceeding a required signal-to-noise ratio E_b/N_0 to reduce error rates (a number for packets is determined according to $Q_L(r_n)$). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Corke with the invention of Zweig since Corke provides a system for retransmitting data packets in a communication system having

variable data rates, wherein data rates for high data rate channels are automatically shifted up or down on a predetermined metric, which can be introduced into the system of Zweig to allow change in data rates to reduce error rates and aid in preventing fragmentations in the system of Zweig.

As for Claim 11, as discussed in the rejection of Claim 4, Zweig teaches a method.

Zweig fails to teach where the transmission rate is unchanged at the lowest one or the highest one.

Tanigichi further teaches in column 4, lines 42-52, a transmission rate control range setting means for setting a minimum transmission rate if the transmission rate is sufficiently low and a maximum transmission rate if the transmission rate is sufficiently high (substantively the same as “the transmission rate remains unchanged if the transmission rate at the step of reducing the transmission rate is the lowest one, or the transmission rate at the step of increasing transmission rate is the highest one” in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Tanigichi with the invention of Zweig since Tanigichi provides a method where transmission rates are controlled within a range to enhance quality of service, and the error factor thresholds of Zweig can be included in the quality of service settings, enhancing the usage of the thresholds by employing them in controlling the transmission rate.

Claims 5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig in view of Tanigichi, Gable, Agarawal, Corke, and further in view of Cheng (Patent No.: US 6,745,352 B2), hereafter referred to as Cheng.

As for Claim 5, Zweig teaches in column 10, lines 23-31, and FIG. 5, Sheet 4 of 4, of how the fragmentation threshold transmission parameter, which can be determined by the error factor upper threshold as discussed above with respect to Claim 4, will determine the number of packets that will be used to send 1500 bytes of data, and each packet will have a corresponding acknowledgement packet (substantively the same as "receiving a first plurality of acknowledge packets, each one in the first plurality of acknowledge packets responding to one of the first plurality of packets" in the instant invention).

Zweig further teaches in column 8, lines 33-36, the transmission error factor is determined by the amount of acknowledgement packet(s) received in response to the transmission of the one or more data packet(s) (substantively the same as "calculating the first estimated PER $P_1(r_n)$ according to the number of the first acknowledge packets and the number of the first plurality of packets" in the instant invention).

Zweig fails to teach wherein the first number is large enough such that the $P_1(r_n)$ is substantially reliable.

Cheng teaches in column 7, lines 33-36, error estimates can be made more reliable by observing a large predetermined number of data frames (substantively the same as "wherein the first number is large enough such that the $P_1(r_n)$ is substantially reliable" in the instant invention). It would have been obvious to one of

ordinary skill in the art at the time of the invention to combine the invention of Cheng with the invention of Zweig since Cheng provides an alternative method of accurately and efficiently determining the error rate and can be incorporated into the method of Zweig to determine error factors and thresholds.

As for Claims 7 and 9, as discussed in the rejections of Claims 4 and 5, Zweig in view of Tanigichi and Chen teach determining a second number according to $Q_L(r_n)$, transmitting a second plurality of packets, wherein the number of a second plurality of packets is determined according to $Q_L(r_n)$, receiving a plurality of acknowledge packets each one of acknowledge packets responding to one of the packets, calculating an estimated PER, according to a number of acknowledge packets, and where a number is large enough such that it is substantially reliable. Zweig further teaches in column 10, lines 23-31, and FIG. 5, Sheet 4 of 4, of how the fragmentation threshold transmission parameter, which can be determined by the error factor lower threshold as discussed above with respect to Claim 4, will determine the number of packets that will be used to send 1500 bytes of data, and each packet will have a corresponding acknowledgement packet, and Zweig also teaches in column 8, line 21, and in FIG. 4, Sheet 3 of 4, that the method of Zweig is a loop, implicitly teaching that multiple groups of packets are transmitted and acknowledged in each revolution (substantively the same as "determining a second number according to the $Q_L(r_n)$ " and "a second" and "the second" and " $P_2(r_n)$ " in the instant invention).

Claims 6, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig in view of Tanigichi, Gable, Agarawal, Corke, Cheng, and further in view of Varma et al. (Patent No.: US 6,643,322 B1), hereafter referred to as Varma.

As for Claims 6, 8, and 10, as discussed in the rejection of Claim 4, Zewig teaches a first plurality of packets and a second plurality of packets.

Zewig fails to teach checking if **M** consecutive packets of the first or second plurality of packets failed to be acknowledged and where **M** is an integer.

Varma teaches in column 6, lines 18-22, and FIG. 5, Sheet 3 of 4, monitoring a number of successive no-acknowledgement messages (substantively the same as checking "if **M** consecutive packets of the first or second plurality of packets that have failed to be acknowledged, ... , wherein **M** is an integer" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Varma with the invention of Zweig since Varma provides an alternative method of measuring errors by monitoring the number of successive no-acknowledgement messages and comparing it to a threshold and can be incorporated into the error-measuring and error-threshold aspects of Zweig.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig in view of Tanigichi, Gable, Agarawal, Corke, and further in view of Kilkki et al. (Patent Number: 6,011,778), Huang et al. (Patent No.: US 7,145,876 B2), Amirjoo et al. (Patent No.: US 6,728,217 B1), and Sano et al. (Patent No.: US 6,246,735 B1), hereafter referred to as Kilkki, Huang, Amirjoo, and Sano, respectively.

As for Claim 12, as discussed in the rejection of Claim 4, Zweig teaches a high PER and a low PER.

Zweig fails to teach an adapting direction parameter, estimated throughput associated with transmission rate, determining estimated throughput being smaller than the previous estimated and if adapting direction parameter is of a first or second direction, performing range adaptation for low and high PER thresholds, and changing transmission rate.

Kilkki teaches in column 3, lines 48-52, a rate variation indicator that indicates whether the cell transmission rate is increasing or decreasing at a particular time, and is used to derive a value that is loaded into cells for transmission (substantively the same as "recording an adapting direction parameter D_n , being one of a first direction, a second direction, and a third value, and the adapting direction parameter representing that the transmission rate is adapted to a higher one, a lower one, and the same one respectively" and "a previous adapting direction parameter D_{n-1} is of the first direction" and "the previous adapting direction parameter D_{n-1} is of the second direction" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Kilkki with the invention of Zweig since Kilkki provides a method where transmitters can inform receivers of transmission rate changes, giving the receivers in Zweig the potential to adapt to network changes more quickly.

Huang teaches in column 3, lines 48-55, of a data throughput that is calculated from a channel's raw bit rate, which is related to the bit rate of the channel

(substantively the same as "computing an estimated throughput $p(r_n)$ associated with the transmission rate r_n " in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Huang with the invention of Zweig since Huang provides a method where throughput can be calculated from the error rate, allowing the network components of Zweig to calculate the effectiveness in changes made to transmission parameters.

Walton teaches in column 12, lines 47-51, a throughput of a new value may be compared against the throughput of a previous value, which includes determining if the throughput of the new value is less than the throughput of the previous value (substantively the same as "determining whether the current estimated throughput $p(r_n)$ being smaller than the previous estimated throughput $p(r_{n-1})$ " in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Walton with the invention of Zweig since Walton provides a method where throughput changes are determined from monitored throughput, allowing Zweig to determine relative improvements from enacting transmission parameter changes.

Amirijoo teaches in column 6, lines 13-18, a BER-related lower quality threshold that is incrementally increased and where a data rate is changed to a higher data rate (substantively the same as "performing a first range adaptation for adapting the low PER threshold $a_L(r_n)$ associated with the current transmission rate r_n ... and increasing the transmission rate" in the instant invention).

Amirijoo also teaches in column 6, lines 59-62, of setting the lower quality threshold stroed in memeoery to a lowest value, also stored in memory, and where the data rate is reduced (substantively the same as “performing a second range adaptation for adapting the ... the low PER threshold $Q_L(r_n-1)$ associated with the previous transmission rate r_n-1 , and decreasing the transmission rate” in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Amirijoo with the invention of Zweig since Amirijoo provides a method where BER-related lower thresholds can be changed to suit network conditions, adding flexibility to the threshold techniques of Zweig.

Sano teaches in column 5, lines 2-4, of a threshold that is varied to suit conditions (substantively the same as “adapting the high ... threshold” in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Sano with the invention of Zweig since Sano provides a method where upper thresholds can be changed to suit network conditions, adding flexibility to the threshold techniques of Zweig.

As for Claim 13, as discussed in the rejection of Claim 4, Zweig teaches high PER threshold and a low PER threshold.

Zweig fails to teach increasing by a first and second predetermined values.

Amirijoo further teaches in column 6, lines 15-24, the lower quality threshold is incrementally increased (substantively the same as “increasing the $Q_L(r_n)$... by a first predetermined value” in the instant invention). It would have been obvious to one

of ordinary skill in the art at the time of the invention to combine the invention of Amirijoo with the invention of Zweig since Amirijoo provides a method where BER-related lower thresholds can be changed to suit network conditions, adding flexibility to the threshold techniques of Zweig.

Sano further teaches in column 5, lines 22-24, the threshold is shifted on the basis of a predetermined conversion equation (substantively the same as "increasing ... by ... a second predetermined value" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Sano with the invention of Zweig since Sano provides a method where upper thresholds can be changed to suit network conditions, adding flexibility to the threshold techniques of Zweig.

As for Claim 14, as discussed in the rejection of Claim 4, Zweig teaches a high PER threshold and a low PER threshold.

Zweig fails to teach decreasing by a fourth predetermined values.

Sano further teaches in column 5, lines 3-4, the threshold is reduced (substantively the same as "decreasing ... by ... a fourth predetermined value" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Sano with the invention of Zweig since Sano provides a method where upper thresholds can be changed to suit network conditions, adding flexibility to the threshold techniques of Zweig.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig in view of Tanigichi, Gable, Agarawal, Corke, Kilkki, Huang, Amirjoo, Sano, and further in view of Barazeche et al. (Patent Number: 4,577,309), hereafter referred to as Barazeche.

As for Claim 15, as discussed in the rejection of Claim 12, Zweig in view of Huang teaches throughput and PER.

Zweig fails to teach computing a final estimated value, where the final value equals to the second value if the second value is valid, otherwise, the final value equals the first value.

Barazeche teaches in column 11, lines 2-9, an excess value is recorded and the excess value equals to a new excess if the new excess value is greater than a past excess value, otherwise, the excess value recorded equals to a past excess value. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Barazeche with the invention of Zweig since Barazeche provides a method to determine the single greatest amount that a value within a sequence of values exceeds a threshold, allowing the method of Zweig to determine the greatest amount a transmission parameter exceeds its threshold.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig in view of Tanigichi, Gable, Agarawal, Corke, Kilkki, Huang, Amirjoo, Sano, Barazeche, and further in view of Ghahramani (Saeed Ghahramani, Fundamentals of Probability –

2nd ed., 2000, Prentice-Hall, Inc., Upper Saddle River, NJ), hereafter referred to as Ghahramani.

As for Claim 16, as discussed in the rejection of Claim 4, Zweig teaches a method.

Zweig fails to teach the equation $p(r_n) = p_0(r_n) \cdot (1 - P(r_n))$.

Ghahramani teaches in the upper half of page 109, equation $P(AB^c) = P(A)[1 - P(B)]$. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Ghahramani with the invention of Zweig since Ghahramani teaches a formula applicable to determining probability of errors and related error rates, and can aid in determining the error factors and thresholds of Zweig.

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zweig in view of Taniguchi, Gable, Agarawal, Corke, Kilkki, Huang, Amirijoo, Sano, and further in view of Bringby et al. (Patent No.: US 6,285,883 B1), hereafter referred to as Bringby.

As for Claim 17, as discussed in the rejection of Claim 12, Zweig in view of Kilkki teaches PER and adapting direction parameters.

Zweig fails to teach calculating a ping-pong parameter where the pin-pong parameter is increased when a value at different times represents an opposite direction to each other, otherwise, the ping-pong parameter is reset, and determining whether the ping-pong parameter is larger than a ping-pong threshold.

Bringby teaches in column 5, lines 6-13 and 42-63, of a function $f(\text{osc_rate})$ that is a function of the rate of oscillating handoff osc_rate , which represents handoff to different cells (substantively the same as “calculating a ping-pong parameter based on the adapting direction parameters D_n and D_{n-1} ” in the instant invention).

Bringby also teaches in column 5, lines 6-13 and 42-63, the function $f(\text{osc_rate})$ increases though higher normalized weighting as the mobile phone is handed off at a higher rate between two base stations (substantively the same as “the ping-pong parameter is increased when D_n and D_{n-1} represents the opposite direction to each other” in the instant invention).

Bringby also teaches in column 5, lines 29-33, if the handoff oscillation rate is above an acceptable level, measures are taken to decline the oscillation rate to an acceptable level (substantively the same as “determining whether the ping-pong parameter being larger than a ping-pong threshold, if yes, processing” in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bringby with the invention of Zweig since Bringby provides a method where a distance between margins of a hysteresis is varied to optimize performance using an optimal distance between margins, and this method can be incorporated for optimizing the distance between the thresholds of Zweig.

As for Claim 18, as discussed in the rejection of Claim 4, Zweig in view of Taniguchi teaches increasing or decreasing a transmission rate.

Zwieig fails to teach a step for avoiding ping-pong event is performed before the step of changing the transmission rate.

Bringby also teaches in column 2, lines 52-56, a method of setting appropriate hysteresis levels for cells in order to reduce the rate of oscillating handoff, implicitly teaching that the method of Bringby is intended to be completed prior to a transmission of cells and prior to subsequent handoffs and their associated changes in mobile station and base station communication links (substantively the same as "the step for avoiding ping-pong event is performed before" in the instant invention). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Bringby with the invention of Zweig since Bringby provides a method where a distance between margins of a hysteresis is varied to optimize performance using an optimal distance between margins, and this method can be incorporated for optimizing the distance between the thresholds of Zweig.

Response to Arguments

Applicant's arguments with respect to claim 4 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA SMITH whose telephone number is (571)270-

1826. The examiner can normally be reached on Monday-Thursday 9:30am-7pm,
Alternating Fridays 9:30am-6pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Joshua Smith
Patent Examiner
20 December 2008

/Hassan Kizou/
Supervisory Patent Examiner, Art Unit 2419